UNCRATING/INSTALLATION INSTRUCTIONS

AMSCO® RELIANCE® 444

Load/Unload Modules

(07/15/99)
Rev. 6

P-122994-142

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A WORD FROM STERIS CORPORATION

Follow each step of the uncrating/installation instructions **in the order presented**. Open the cartons carefully to avoid damage to the equipment inside. If you find any indication of damage to the equipment (no matter how slight), show it to your supervisor.

A listing of the **Safety Warnings and Cautions** to be observed when uncrating and installing this equipment can be found in Section 1 of these instructions. Do not begin uncrating/installing this equipment until you have become familiar with this information.

To properly install this unit, you will need the Equipment Drawing (provided), showing all utility service and space requirements. If drawing cannot be located, replacement copies may be obtained by writing, faxing or telephoning STERIS giving the serial, equipment and model numbers of your equipment.

STERIS supervision is recommended for installing and starting up this equipment. Contact the STERIS Regional Office nearest you for pricing and availability of this service in your region.

Indications For Use

Amsco® Reliance® 444 Load/Unload Modules, when connected to the Amsco Reliance 444 Single Chamber Washer/Disinfector, provide a fully automated rack conveyance system. Load/Unload modules are available in one rack and two rack configurations.

Advisory

Check the Occupational Health and Safety Act, as well as local electric and plumbing codes, for any special requirements that may pertain to installation of this equipment.

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LISTING OF WARNINGS, CAUTIONS AND SYMBOLS

1

The following is a listing of the safety precautions which must be observed when uncrating and installing this equipment. WARNINGS indicate the potential for danger to personnel and CAUTIONS indicate the potential for damage to equipment. These precautions are repeated (in whole or in part), where applicable, throughout the instructions.

WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD:

⚠ **When moving the unit,** use a forklift.

⚠ **Only fully qualified service personnel should assemble and/or make adjustments to this equipment.** Assembly or adjustments done by inexperienced, unqualified personnel could cause personal injury or result in costly damage.

WARNING - LACERATION/EYE INJURY HAZARD:

⚠ **When removing bands,** wear gloves and eye protection, and always use a tool specifically designed to cut the bands. The bands used to secure cartons can cause personal injury when cut and tension is released.

WARNING - LACERATION HAZARD:

⚠ **When removing bolts,** wear gloves to protect your hands.

WARNING - PERSONAL INJURY HAZARD:

⚠ **When baskets are present on load conveyor,** keep fingers/hands away from wash chamber and moving baskets.

WARNING - ELECTRIC SHOCK AND BURN HAZARD:

⚠ **Disconnect all utilities to unit before servicing.** Do not service the unit unless all utilities have been properly locked out. Always follow OSHA Lockout-Tagout and electrical safety-related work practice standards. (See 29 CFR 1910.147 and .331 through .335.)

CAUTION - EQUIPMENT DAMAGE HAZARD:

⚠ **When removing adhesives from stainless steel**, use a small amount of nonflammable cleaning solvent. Rub in a back-and-forth motion (in same direction as surface grain). Solvent rubbed in a circular motion or applied with a wire brush or steel wool on cabinet assemblies can be harmful to stainless steel. Do not use solvents on painted surfaces.

⚠ **When leveling load/unload modules**, use ONLY the module leveling legs. DO NOT RAISE OR LOWER WASHER LOADING RACK FOR ANY REASON. Washer loading rack is adjusted and inspected at factory to ease installation procedures.

⚠ **Observe the Electrostatic Precautions** outlined in Section 3. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

Symbols

Symbol	Definition
	Transfer of Heat, Hot Surface
	Protective Earth (Ground)
	Warning! Risk of Electrical Shock
	Electrostatic Sensitive Device
	Attention, Consult Manual for Further Instructions
	Tip N' Tell
	This Side Up
	Keep Dry
	Fragile
	Do Not Stack
A	Amperage Rating of the Unit
V	Voltage Rating of the Unit
~	Alternating Current
kW	Power Rating of the Unit
Hz	Frequency of the Unit
ϕ	Phase of the Unit

Open Cartons

WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: When moving the unit, use a forklift.

WARNING - LACERATION/EYE INJURY HAZARD: When removing bands, wear gloves and eye protection, and always use a tool specifically designed to cut the bands. The bands used to secure cartons can cause personal injury when cut and tension is released.

NOTE: Uncrate on a level floor as close to installation site as possible.

1. Place cartons in the following order: Load-end conveyor module, Amsco® Reliance® 444 Single Chamber Washer/Disinfector, Unload-end conveyor module. Provide a clear work area around each carton.

NOTE: Carton name is indicated on each cardboard box.

NOTE: Conveyor modules are available in one rack (C2 and C3) and two rack (C1/C2 and C3/C4) configurations. See Figure 2-1.

2. Carefully cut and remove bands from each carton.
3. Discard bands before continuing.
4. Remove and discard cardboard top panel.
5. Remove and discard cardboard side panels.
6. Open conveyor end service panels, located at the end of each conveyor module (see Figure 2-1). Check tip indicator (located on right-hand side of service compartment) in both modules. Tip indicator contains a blue compound at the bottom of the indicator. If module has been tipped, residue from the blue compound will be found higher up in the indicator.

   If module was tipped, contact your STERIS representative to determine if a service technician is required to inspect the equipment and determine if module was damaged.

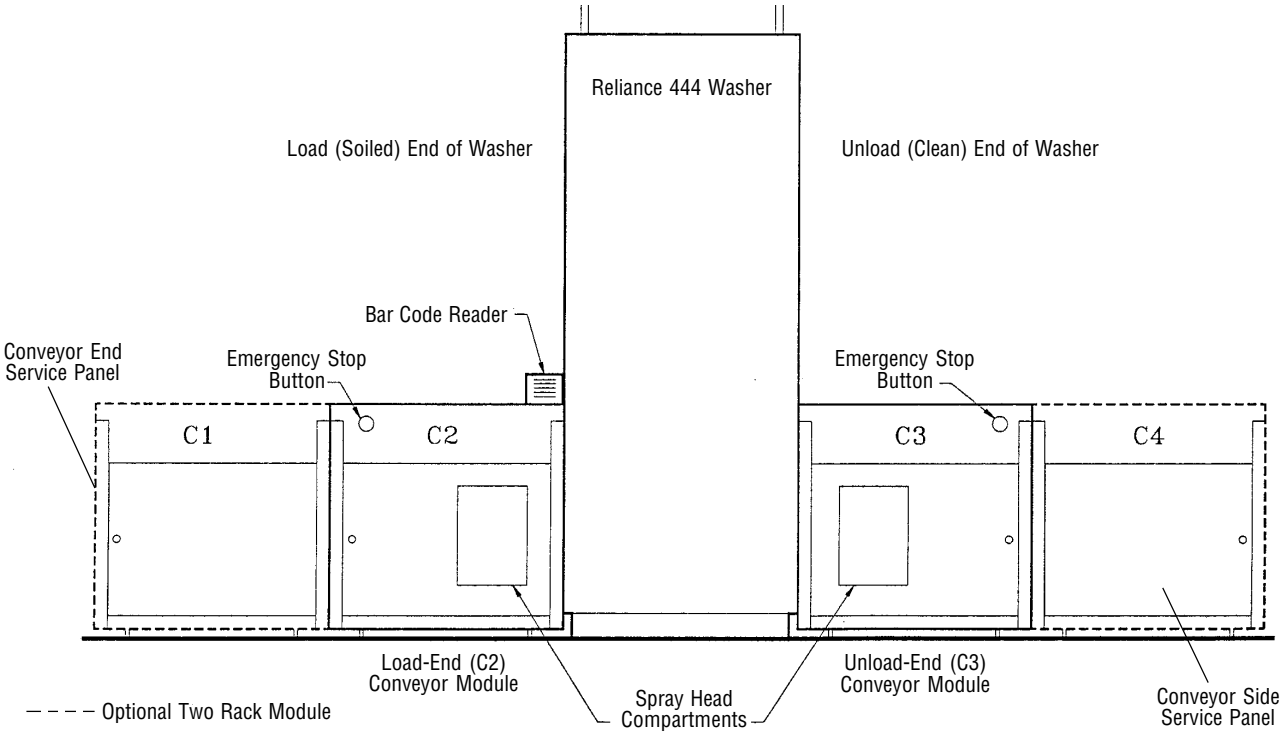

Figure 2-1. Reliance 444 Load and Unload Modules

7. Remove the box labeled "Hardware" from inside Unload-end (C3) conveyor service compartment. Check that hardware box contains everything needed to perform this installation (see Table 2-1).

Table 2-1. Hardware Box Contents

Part Number	Description	Quantity
117904-584	Proximity Sensor Assembly	2
117906-791	Bar Code Holder	1
117905-670	Bar Code Reader Extension Cord	1
117906-446	Holding Rod	4
117950-856	Screw, S/S, Truss Head, 8-32 x 3/8"	6
117906-487	Cold Water Inlet Assembly	1
117906-417	Manual Valve Mounting Bracket	1
117906-507	Cold Water supply to condenser bottom piping	1
117908-019	P54/P55/P8/P9 Cable Assembly*	1
117908-028	EPROM Board	1
117908-134	Stand-off	1
117908-505	Service Mode EPROM	1
117908-506	Automatic Mode EPROM	1
117954-655	Ty-Rap	12
122995-451	Electrical Schematics	1
122990-568	Color Code	1
117905-826	Cycle 10 Bar Code Tag	1

** NOTE: If washer is electric heated built before 3603298XXX (electric heaters in wash chamber), P54 cable must be replaced. Replacement wiring Harness Kit 117-998-643 (including drawing and harness) must be ordered and installed on the washer for proper operation of unit and load/unload module.*

Remove Wooden Bases and Move Conveyor Modules

WARNING - LACERATION HAZARD: When removing bolts, wear gloves to protect your hands.

WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: When moving the unit, use a forklift.

1. Unscrew and discard anchoring bolts holding Load-end module to wooden shipping base.
2. Position forklift under conveyor module frame.
3. Lift conveyor module from wooden base.
4. Pull out and discard wooden base.
5. Move Load-end module to installation site.

NOTE: Make sure equipment is placed in the following order: Load-end conveyor module, Amsco Reliance 444 Single Chamber Washer/ Disinfector, Unload-end conveyor module.

6. Lower module to the floor.
7. Repeat steps for Unload-end module.

Before Installing Equipment

⚠ WARNING - PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: Only fully qualified service personnel should assemble and/or make adjustments to this equipment. Assembly or adjustments done by inexperienced, unqualified personnel could cause personal injury or result in costly damage.

1. Install the Amsco® Reliance® 444 Single Chamber Washer/ Disinfector according to the Uncrating/Installation Instructions, P-122992-165, provided with the washer.

IMPORTANT: *Make sure to review washer Installation Checklist before installing Load/Unload modules.*

IMPORTANT: *If the character in position 7 of the unit serial number is a 4 or less (S/N 36xxxx4xxx), modifications must be made to the washer using upgrade kit #444-022, before installing conveyor modules.*

2. Review installation requirements for conveyor modules:
   a) Clearance - Clearance space shown on Equipment Drawing is necessary for easy installation and proper operation and maintenance of conveyor modules.
   b) Utility Service Lines - Utility service requirements are shown on Equipment Drawing. The conveyor modules require 120 V, 60 Hz, 1-phase, 2 wires. Check Equipment Drawing or Identification plate (located inside spray head compartment door) for proper voltage.
   c) Check floor level and note floor slope to determine how high conveyor sections should be raised above floor when leveling.
3. Place conveyor modules in order shown on the Equipment Drawing, in correct relation to washer and building supply lines. If modules are not at installation site, refer to Uncrating Instructions (Section 2) for proper moving instructions.

NOTE: Leave sufficient space between and around modules to perform installation.

4. Lock out and tag out electrical supply disconnect switch on the washer to **OFF** position and close washer supply valves.
5. Remove lower service access doors from both ends of the washer.

Cold Water Connections

NOTE: The following connections are required to tie the module cold water piping to the existing washer cold water piping.

1. Locate washer cold water piping connecting cold water inlet to condenser (see Figure 3-1). Piping is made of two parts.
2. Remove union (located underneath sump) connecting both pipes (see Figure 3-1, item 1).
3. Remove piping attached to cold water inlet side (see Figure 3-1, item 2).
4. Replace piping with cold water supply piping provided (see Figure 3-2).

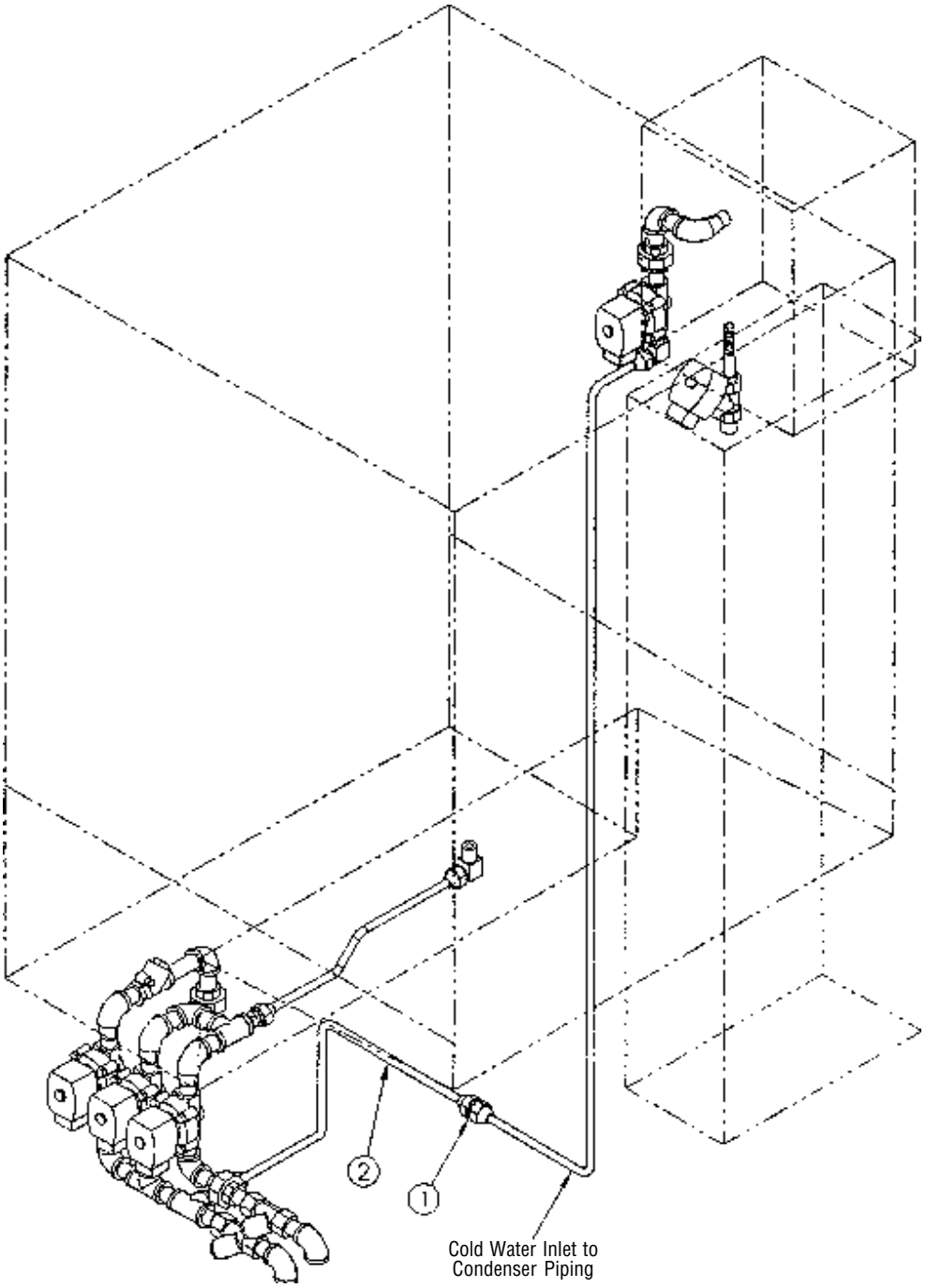

Figure 3-1. Washer Cold Water Connections

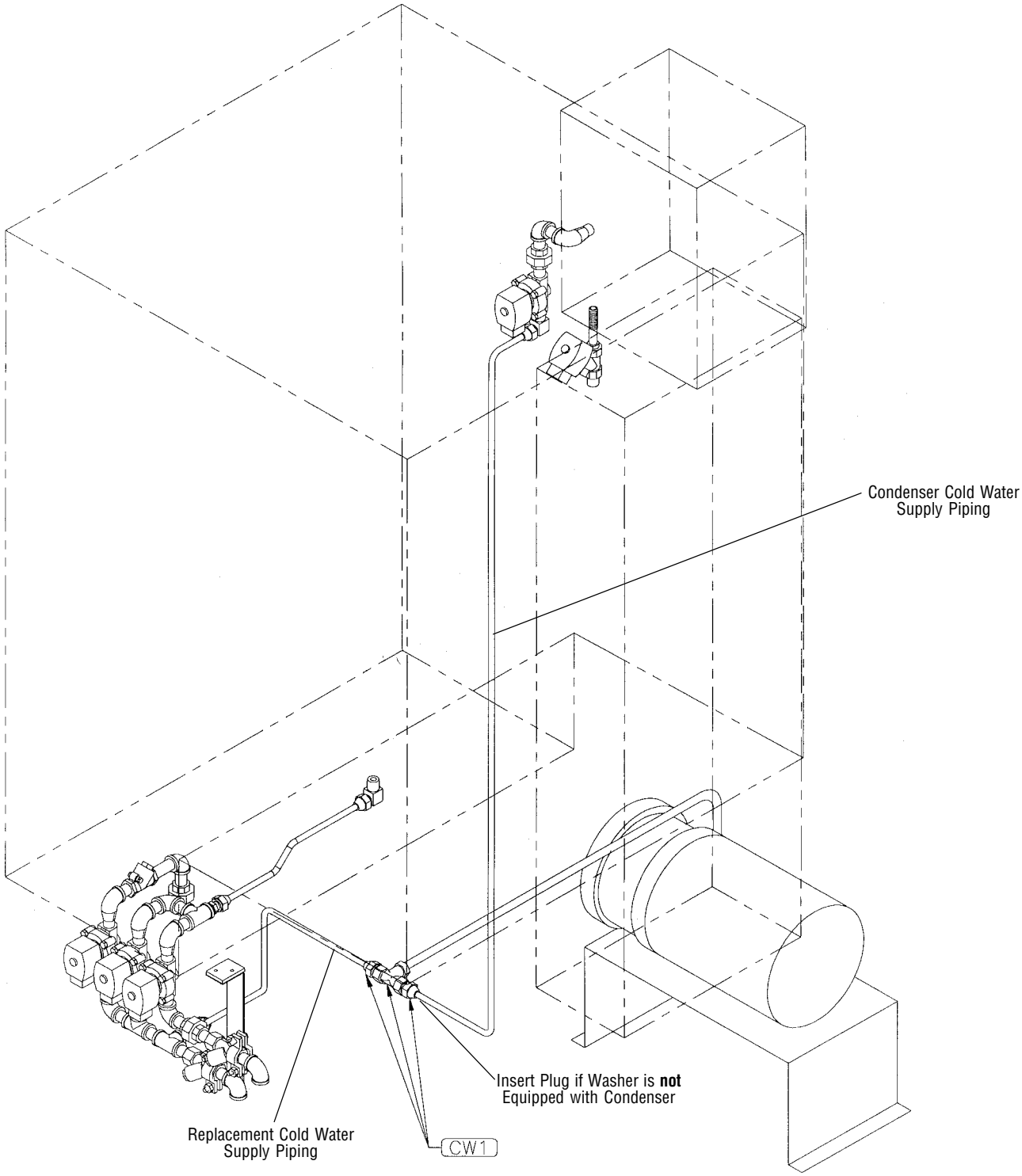

Figure 3-2. Washer Cold Water Connections Modified for Load/Unload Modules

5. Install CW1 tee at the end of the cold water supply piping (see Figure 3-2).
6. Connect other end of tee to condenser cold water supply piping (see Figure 3-2).

NOTE: If washer is not equipped with condenser, install cold water supply piping as shown in Figure 3-2, except insert a 1/2" NPT plug into the right-hand end of CW1 T-connection.

7. Locate manual cold water supply valve and mounting bracket provided in box labeled "Hardware". Remove valve handle and insert valve into mounting bracket. Install valve and mounting bracket over pump motor base, located in washer service compartment (see Figure 3-3), using two 8-32 x 3/8" screws provided (CWZ and CW4 installed later, in installation procedure). Reinstall valve handle. Connect cold water supply from T-connection (CW1) to cold water supply valve (CW3) using copper piping provided.

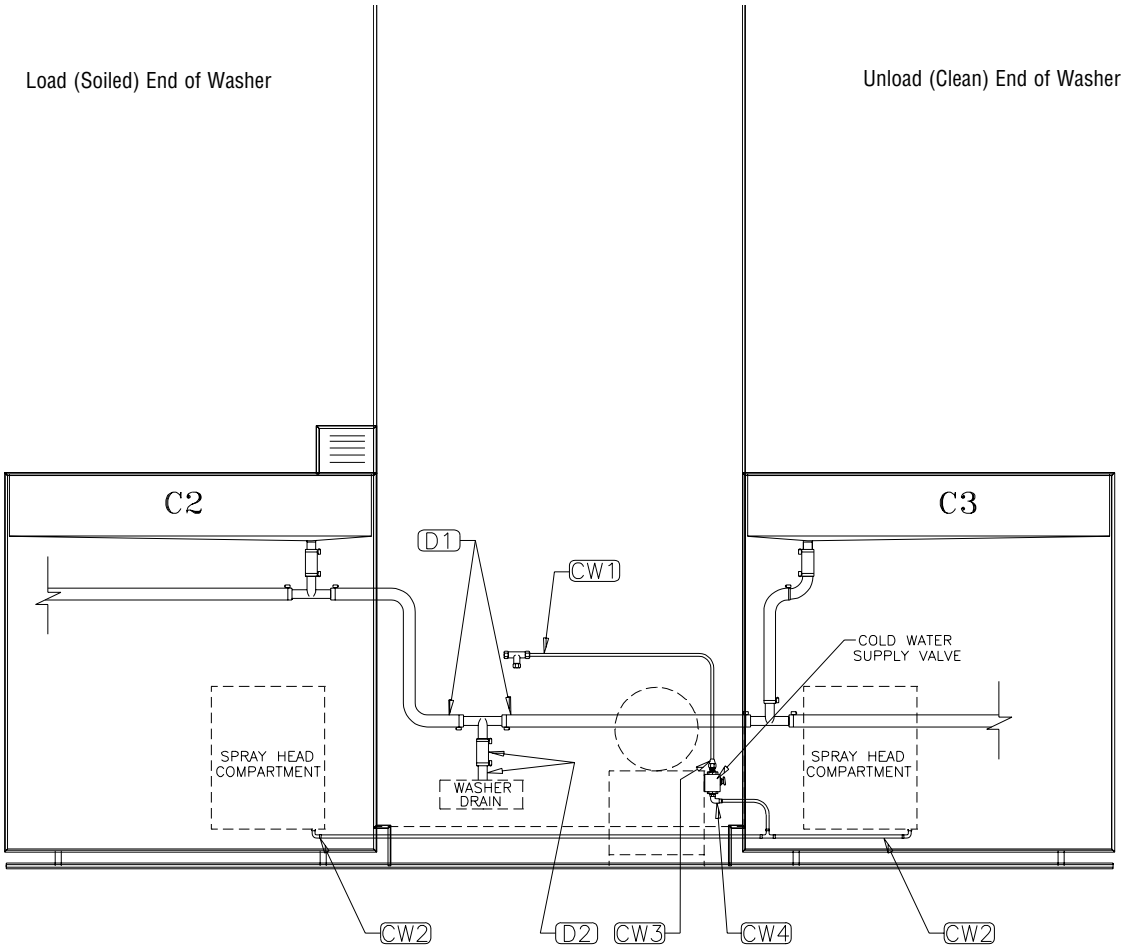

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Figure 3-3. Cold Water and Drain Connections

P54 Cable Replacement

NOTE: Check underneath washer main console for the part number for the P54 AC Wiring Harness. If part number is 117-906-552 and washer is steam heated, there is no cable to replace.

If washer is electric heated built before 3603298XXX (electric heaters in wash chamber), P54 cable must be replaced. Replacement wiring Harness Kit 117-998-643 (including drawing and harness) must be ordered and installed on the washer for proper operation of unit and load/unload module.

Washers with S/N after 3603298XXX are provided with 117-908-019 AC wiring harness. Skip Steps 1 trough 9 if unit is equipped with the 117-908-019 cable harness.

1. Locate P54 cable under the washer load-end control console with printer (see Figure 3-4).
2. Remove pump detergent mounting plate to gain access to the work area (enzyme Pump and Pump 2 are mounted on the plate located above the detergent compartment).
3. Disconnect detergent pump electrical connections from the mounting plate. Disconnect detergent hoses from washer and from supply line in order to remove pump mounting plate.
4. Disconnect P54 cable assembly from under the control console.
5. Follow P54 cable and disconnect cable ends from these locations:

NOTE: Pay attention to cable routing to ease reinstallation.

   a. AC10 from control console rear;
   b. P55 from contactor box;
   c. AC0, AC1 and AC2 (water supply valves underneath sump) from contactor box;
   d. AC4 and AC12 (steam valves) from contactor box.

6. Disconnect the P54/P8 connection and discard P54 and P8 cables.
7. Install new P54 cable through unload (clean) end of washer and attach to bottom of washer control console. Reconnect cable ends to their respective locations.
8. Reinstall detergent pump mounting plate. Reconnect detergent supply hoses to washer and supply line.
9. Reconnect detergent pump electrical connections at back of the mounting plate.
10. Disconnect P53 and P54 cables from washer load-end control console with printer.
11. Using screws provided, connect end of P75 extension cable to control console with printer P75 receptacle (see Figure 3-4). Route cable behind detergent pump area and leave cable inside detergent pump compartment.
12. Reconnect P53 and P54 cables to washer load-end control console.

NOTE: Final electrical connections are completed later in the installation procedure.

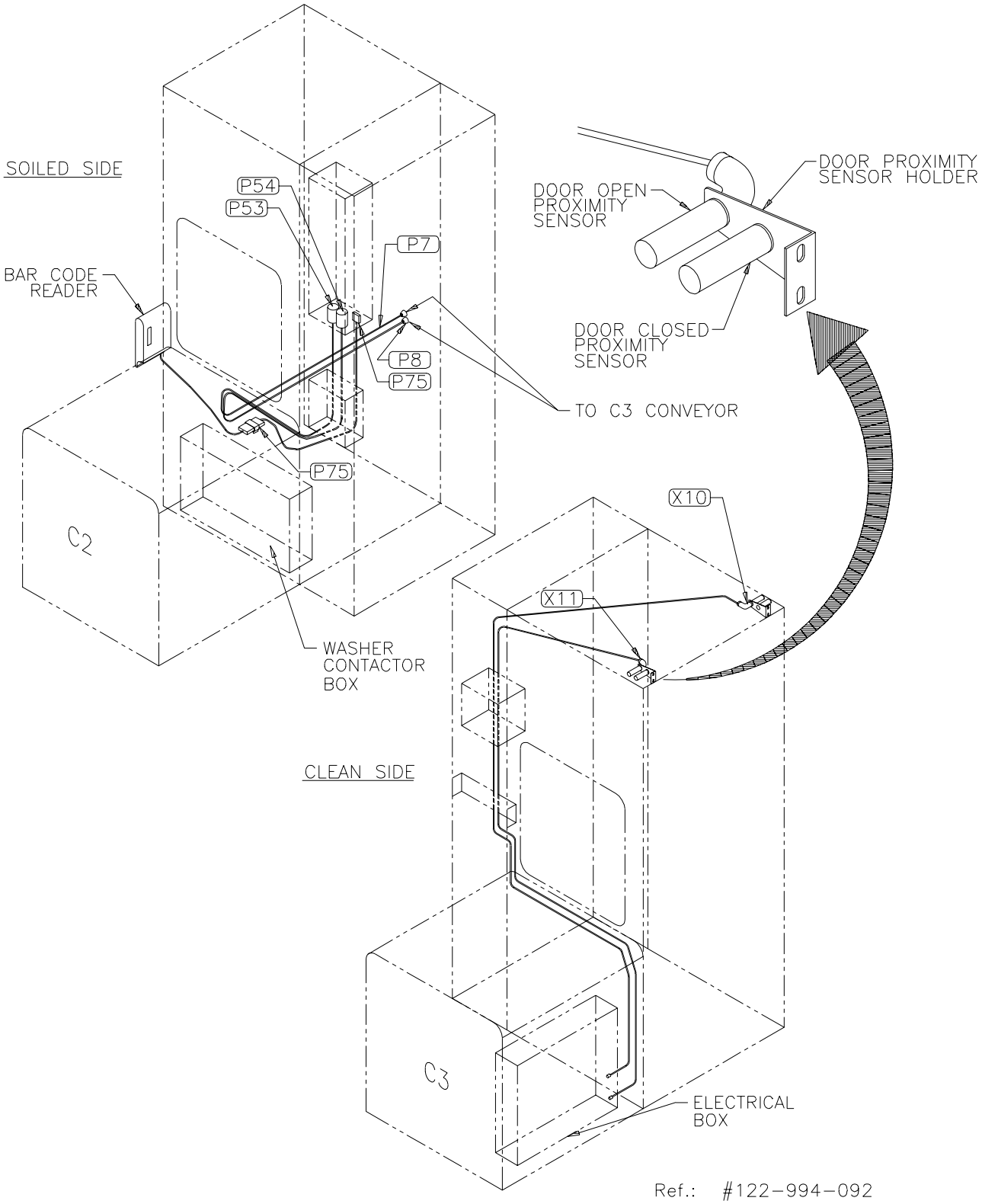

Figure 3-4. Electrical Connections

Installation of Door Proximity Sensor

1. Locate door sensor holders on top of washer (see Figure 3-4). Each holder has one empty space to accommodate new sensors.
2. Install Door Open proximity sensors provided (X10 on Load end and X11 on Unload end). Partially thread each sensor into the appropriate holder, leaving 1/2" from door to sensor end (connections to C3 electrical box are completed later in this procedure).

NOTE: Make sure end of each Door Open sensor clears opening in door frame (see Figure 3-5).

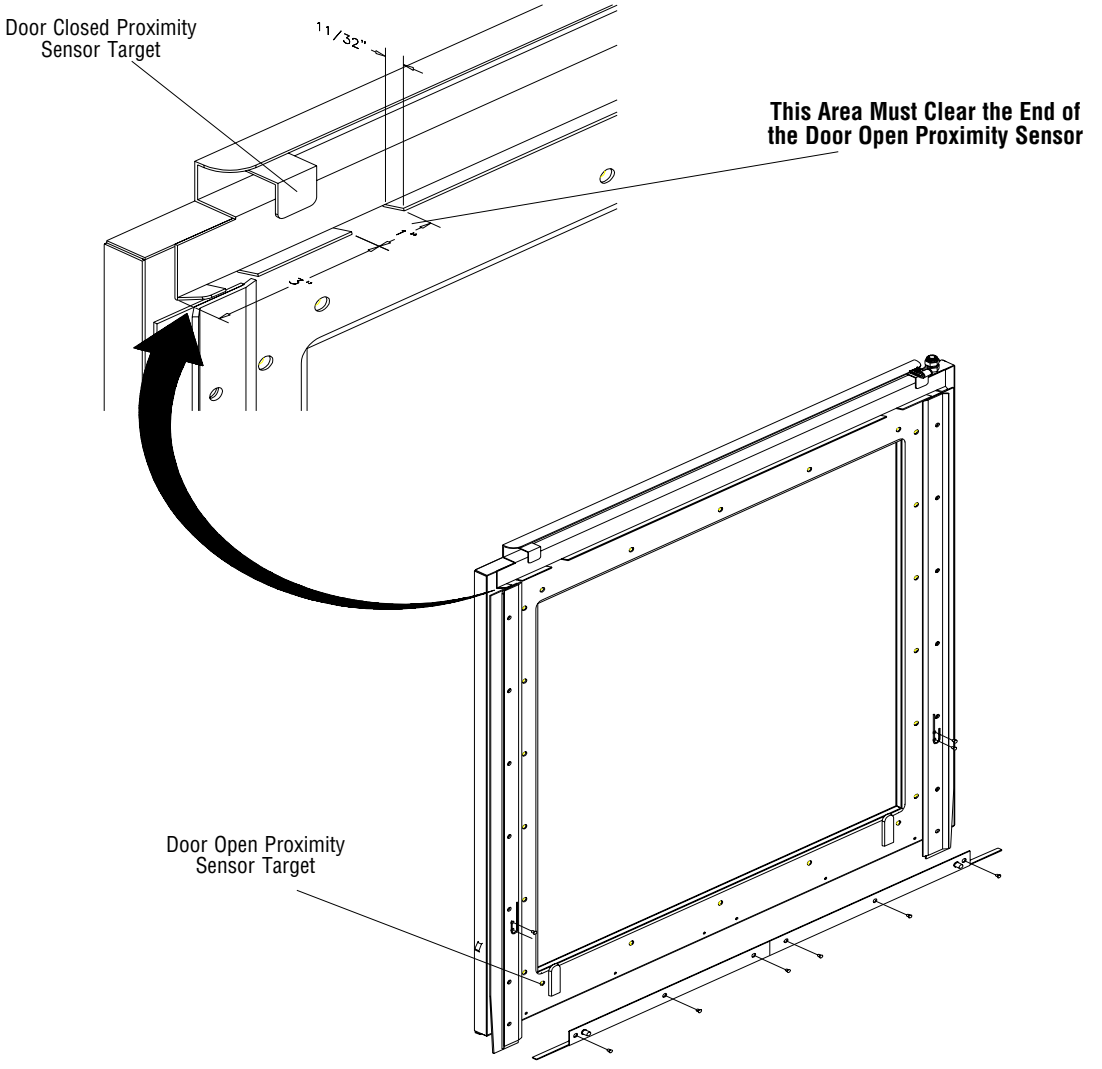
Door Closed Proximity Sensor Target
11/32"
This Area Must Clear the End of the Door Open Proximity Sensor
Door Open Proximity Sensor Target
Réf. #920-004-244

Figure 3-5. Door Proximity Sensor Installation

Load/Unload Modules Installation

1. Position Load-end module (C2 or C1/C2) against load (soiled) end of the washer. L-shaped edge of conveyor must be positioned over the load door sill.
2. Position Unload-end module (C3 or C3/C4) against unload (clean) end of the washer. L-shaped edge of conveyor must be positioned over the unload door sill.

NOTE: Due to floor slope, a gap may exist between L-shaped edge of conveyor and door sill.

3. Level each module, end-to-end and side-to-side, using the four outer leveling legs with casters.

   NOTE: On two-rack modules, center casters should not be in contact with floor.

   a. Open washer chamber doors. Place straight edge across the wash chamber loading rack sliding guides and modules sliding guides.

   IMPORTANT: *Do not use L-shaped edge of conveyor as a reference for leveling. Make sure that distance between water inlet collar and loading rack sliding guides is at 3/16" to 1/4" (factory setting) See Figure 3-6.*

   b. Align modules with washer.

   c. Level load-end module so that conveyor sliding guides are 1/16" higher than wash chamber guides.

   d. Level unload-end module so that conveyor sliding guides are even with wash chamber guides.

   e. Once modules are leveled, adjust center casters to barely contact the floor (two-rack modules only).

CAUTION: When leveling load/unload modules, use ONLY the module leveling legs. DO NOT RAISE OR LOWER WASHER LOADING RACK FOR ANY REASON. Washer loading rack is adjusted and inspected at factory to ease installation procedures.

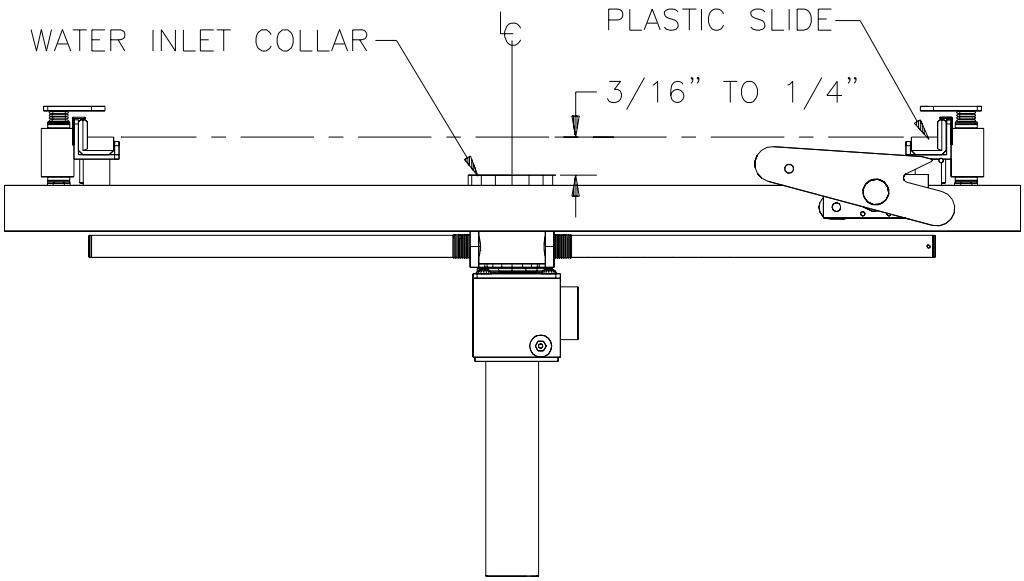

Figure 3-6. Check Distance Between Water Inlet Collar and Loading Rack Sliding Guides

Spray Head and Drain Connections

1. Locate CW2 pipe end (cold water supply to spray head) in C3 service compartment (see Figure 3-3). Run piping under washer to C2 service compartment, and connect to CW2 elbow located on C2 spray head compartment.
2. Connect CW4 hose end to elbow under the cold water supply valve in washer service compartment (see Figure 3-3).
3. In C3 service compartment, locate drain hose with plastic tee. Remove funnel plug in washer drain. Run hose end to washer service compartment and connect D2 tee to washer drain funnel (see Figure 3-3).
4. Locate D1 hose end in C2 service compartment. Run hose end to washer service compartment and connect D1 hose end to plastic tee (see Figure 3-3).

Pneumatic Connections

NOTE: When connecting modules to an existing washer, shut off and bleed existing air supply line before disconnecting from washer.

1. Run a 10' long translucent hose (1/4" OD) from C2 service compartment to washer service compartment. Run hose up through the cabinet channel, located along side of washer door, to the main air supply line filter/regulator located near top of washer (see Figure 3-7).

IMPORTANT: *Make sure hose does not interfere with operation of the washer door cable.*

2. Connect A1 hose end to washer main air supply line filter/regulator by pushing back the connector's outer ring, inserting hose and releasing outer ring (see Figure 3-7). Connect Customer air supply line to the other end of the tee.

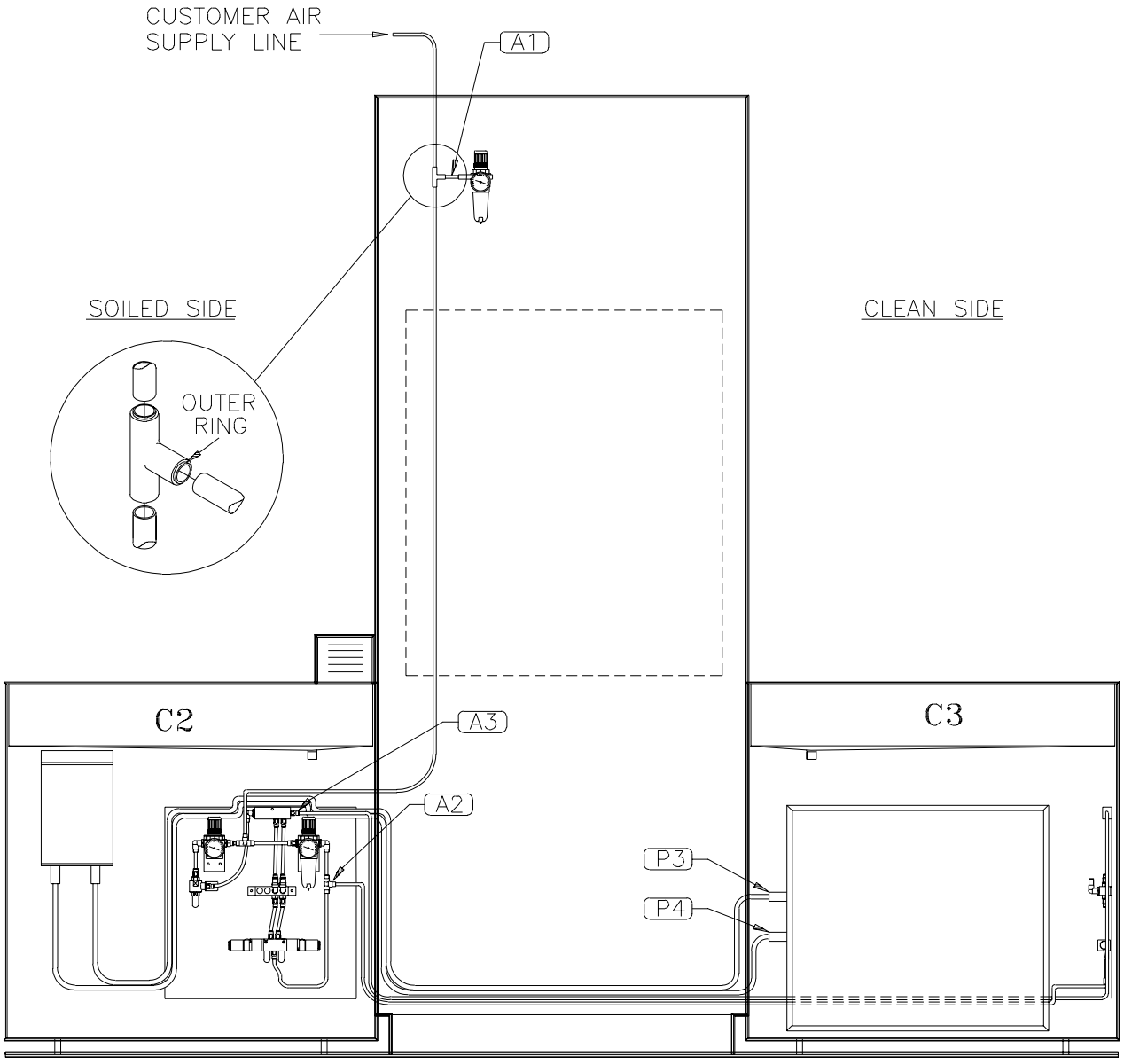

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Figure 3-7. Pneumatic and Electrical Connections

3. Locate A2 hose (air supply to C3 module) in C3 service compartment. Run hose under washer to C2 service compartment and connect end marked A2 to the pneumatic tee identified as A2, located on the pneumatic system holder (see Figure 3-7).
4. Locate A3 hose in C3 service compartment. Run hose under washer to C2 service compartment and connect it to air manifold identified as A3 (see Figure 3-7).
5. Turn on air supply. Verify low pressure regulator is adjusted to 20 psi and the high pressure regulator is adjusted to 55 psi.

Electrical Connections

Refer to Figure 3-9 and Figure 5-1 for all electrical connections.

1. Remove bar code reader and holder from the Hardware box.
2. Install bar code reader and holder directly onto C2 cabinet corner, using four 8-32 x 3/8" screws provided (see Figure 3-4).
3. Run bar code reader cable underneath drip pan of C2 module and connect end to P75 extension cable (see Figure 3-4).
4. In C2 service compartment, cut tie wrap holding P3 and P4 cable ends to pneumatic system holder.
5. Run both cable ends through washer service compartment to C3 service compartment, and plug into B3 electrical box (see Figure 3-9).
6. Locate P7 and P8 cable ends (see Figure 3-4). P7 is an extension of P53 cable and P8 is an extension of P54 cable.
7. Connect P7 and P8 cables to P7 and P8 receptacles mounted on B3 electrical box.
8. In C3 compartment, locate and run yellow cables identified as X10 and X11 to top of washer (see Figure 3-4) . Cables must run behind unload (clean) end control console, to top of washer.

IMPORTANT: *Make sure cables are away from steam pipe and do not interfere with door opening.*

9. Connect X10 cable end to the proximity sensor located on the load (soiled) end of the washer (see Figure 3-4).
10. Connect X11 cable end to the proximity sensor located on the unload (clean) end of the washer (see Figure 3-4).
11. If a two-rack unload module (C3/C4) is installed, disconnect wire # 63 from X23 input (see Figure 5-1) and TB3- in B3 electrical box (see Table 3-1 for other configurations).
12. **Connect 120 VAC building electrical supply line** to the terminal block (terminals labeled L1, N and Ground) located in B3 electrical box (see Figure 5-1).

IMPORTANT: *Electrical supply to the conveyor must be a separate power supply line. Do not use 120 VAC power from washer (step-down transformer is not sized to feed load/unload modules).*

JUMPER SETTING (J1, J2)		
J1, X22	J2,X23	
OFF	OFF	DOUBLE LOAD MODULE/ DOUBLE UNLOAD MODULE
OFF	ON	DOUBLE LOAD MODULE/ SINGLE UNLOAD MODULE
ON	OFF	SINGLE LOAD MODULE/DOUBLE UNLOAD MODULE
ON	ON	SINGLE LOAD MODULE/SINGLE UNLOAD MODULE

Table 3-1. Jumper Setting

Recommended Electrostatic Discharge (ESD) Precautions

WARNING - ELECTRIC SHOCK AND BURN HAZARD: Disconnect all utilities to unit before servicing. Do not service the unit unless all utilities have been properly locked out. Always follow OSHA Lockout-Tagout and electrical safety-related work practice standards. (See 29 CFR 1910.147 and .331 through .335.)

NOTE: The following precautions should be taken whenever Printed Circuit (PC) Boards are being handled or replaced.

- Always use an ESD safe container when transporting boards from one location to another.
- No boards should be removed from their containers except at an approved static station or where personnel and machine are properly grounded.
- At minimum, use a wrist strap grounded to the washer when removing and/or replacing PC Boards.

NOTE: Failure to follow the above precautions may result in electrostatic damage to the Printed Circuit Board. If a static discharge happens to go through an Integrated Circuit (IC) and the transient current pulse is not effectively diverted by protective circuitry, the current from the discharge can flow through the board and raise the temperature of internal junctions to their melting point. Damage can range from latent degradation to complete destruction.

Installation of Double Memory and Washer Configuration

NOTE: Before removing EPROM memory, turn washer ON and press bottom portion of the Printer Function rocker switch to obtain a copy of the current washer cycle settings.

1. Take note of the actual washer configuration by entering the Factory Setup mode.

   Enter Factory Setup mode as follows:

   a) Press and hold the top portion of the Printer Function rocker switch and set Power rocker switch to **POWER** position. Display shows:

   ENTER SERVICE MODE
   ACCESS CODE: 1091

   b) Press **DOOR CLOSE** touch pad.

   c) Press **DOOR OPEN** touch pad.

   d) Press **DOOR CLOSE** touch pad.

   e) Press **DOOR OPEN** touch pad.

   f) Press **CHANGE VALUES** touch pad. Display shows:

   DELETE CONFIGURATION
   CVTP = YES SVTP = NO

2. Press **SAVE VALUES** touch pad to keep actual configuration. Display shows:

   STEAM HEATED UNIT?
   YES

3. Press **CHANGE VALUES** touch pad to review and take note of the existing configuration.

NOTE: Use the following checklist to record unit configuration. Questions will vary depending on EPROM version installed.

	YES	*NO*
Steam Heat Unit		
Double Door Unit		
Power Door Option		
Pure Water System		
Enzyme Treatment		
Lubricant Option		
Drying System		
Non-vented Unit		
Automation Option	*	
Serial Number *36* _____		

** NOTE: Must be Yes for Load/Unload modules*

4. Press **CHANGE VALUES.** Display shows:

REVIEW OPTIONS AGAIN?
CVTP = YES SVTP = NO

5. Press **SAVE VALUES** to exit Factory Setup Mode or press **CHANGE VALUES** to review the washer configuration again.

   If **SAVE VALUES** is pressed, display shows:

TESTS BURN-IN
CALIBRATE VALUES

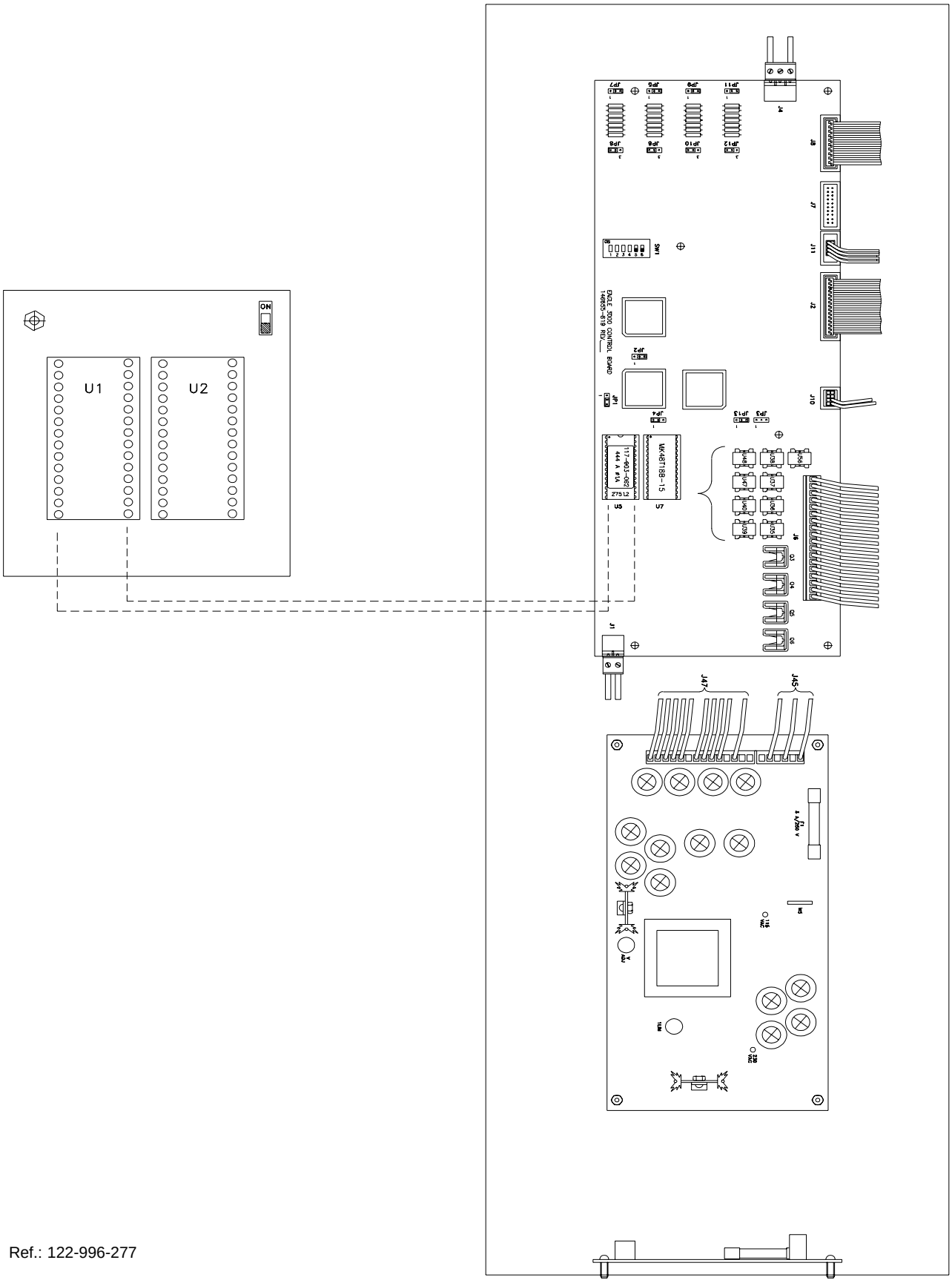
6. Press **EXTEND CYCLE** touch pad to exit Service Mode.
7. Position Main Power switch, located on electrical supply box, to **OFF** and lock out and tag out unit electrical disconnect switch to **OFF** position.
8. Install Service Mode EPROM on the right side (U2 location) of the new EPROM board. Install Automatic Mode EPROM on the left side (U1 location) of the new EPROM board. See Figure 3-8.

NOTE: Set new EPROM board on a non-static surface when installing EPROM; use board packaging.

9. Flip dip switch S1 on double memory holder to **ON** position, to select the Service Eprom.
10. Open washer control front panel. Using one hand to support the control assembly, remove the two hex screws (upper right and upper left) holding assembly in place.
11. Carefully lower control assembly forward and downward until it stops in a horizontal position. Stops are provided to support the control in this position.

⚠ WARNING - ELECTRIC SHOCK AND BURN HAZARD - Disconnect all utilities to washer before servicing. Do not service the washer unless all utilities have been properly locked out. Always follow OSHA Lockout-Tagout and electrical safety-related work practice standards. (See 29 CFR 1910.147 and .331 through .335.)

⚠ CAUTION! Observe the Electrostatic Precautions outlined in Section 3. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.



Ref.: 122-996-277

Figure 3-8. Control PC Board

⚠ CAUTION! Observe the Electrostatic Precautions outlined in Section 3. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

NOTE: The following precautions should be taken whenever printed circuit boards are being handled or replaced:

- *Always use an ESD safe container when transporting boards from one location to another.*
- *No boards should be removed from their containers except at an approved static station or where personnel and machine are properly grounded.*
- *At minimum, use a wrist strap grounded to the washer when removing and/or replacing PC boards.*

NOTE: Failure to follow the above precautions may result in electrostatic damage to the printed circuit board. If a static discharge happens to go through an integrated circuit and the transient current pulse is not effectively diverted by protective circuitry, the current from the discharge can flow through the board and raise the temperature of internal junctions to their melting points. Damage can range from latent degradation to complete destruction.

12. Remove existing EPROM (U5 location) from washer control PC board.
13. Install new EPROM board in place of the old EPROM just removed from the control PC board.

NOTE: Stand off must be mounted between upper left corner of new EPROM board and existing control board to maintain board position.

14. Raise control assembly and secure in position with screws previously removed.
15. Set unit electrical disconnect switch to **ON** position. Position Main Power switch, located on electrical supply box, to **ON.**
16. Set Power rocker switch to **POWER** position. Display shows:

ENTER SERVICE MODE ACCESS CODE:1091

17. Re-enter the Factory Setup Mode, as explained previously in step 1. Using checklist as a reminder, re-configure washer options.

IMPORTANT: *Press CHANGE VALUES touch pad to select YES, when asked to delete configuration.*

18. Display must show:

AUTOMATION OPTION? YES

If display shows **NO**, press **VALUE UP** touch pad to change **NO** to **YES**, then press **CHANGE VALUES** touch pad to confirm selection.

19. At the end of the procedure, press **SAVE VALUES** touch pad to exit Factory Setup mode. Display shows:

```
*SERVICE TEST
RELIANCE MODEL 444
```

then...

```
TESTS          BURN-IN
CALIBRATE      VALUES
```

Adjustment of Door Proximity Sensor

NOTE: Make sure end of each Door Open sensor clears opening in door frame (see Figure 3-5).

1. Press **CYCLE START** touch pad. Display shows:

```
OUTPUTS        INPUTS
TPS TEST       VALUES
```

☐ *indicates flashing position.*

2. Press **CYCLE START** to select **OUTPUTS**. Display shows:

```
I/O OUT        CRTL OUT
```

☐ *indicates flashing position.*

3. Press **CYCLE START** to select **I/O OUT**. Display shows:

```
I 0 dv fn p1 --  --  --
 --  --  --  --  ld ud wc
```

☐ *indicates flashing position.*

(display may vary depending on options)

4. Press **CURSOR** touch pad to select **ld** (load door). Press VALUE UP touch pad to open washer load door.
5. Press **CURSOR** touch pad to select **ud** (unload door). Press **VALUE UP** touch pad to open washer unload door.
6. Press **STOP/RESET** touch pad. Display shows:

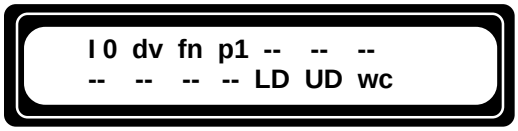
```
I/O OUT        CRTL OUT
```

7. Using **CURSOR** touch pad, select **CTRL OUT** and press **CYCLE START**. Display shows:

```
CB  cw  hw  ls  hs  ss  cd
 lt  ps  df  dh  --
```

8. Press **CURSOR** touch pad to select It. Press **VALUE UP** touch pad to energize the interior light.
9. Press **STOP/RESET** touch pad. Display shows:

10. Using the **CURSOR** touch pad, select **I/O OUT** and press **CYCLE START**. Display shows:



(display may vary depending on options)

11. Adjust X10 proximity sensor on load end of washer. Sensor end must be at least 1/16 " from door open proximity sensor target (see Figure 3-6). Open and close load door to check setting (to close load door, select **LD** and press **VALUE DOWN** touch pad).
12. Adjust X11 proximity sensor on load end of washer. Sensor end must be at least 1/16" from door open proximity sensor target (see Figure 3-6). Open and close load door to check setting (to close unload door, select **UD** and press **VALUE DOWN** touch pad).

IMPORTANT: Make sure that each sensor detects door only when door is fully open (LED on back of sensor lights up). While door is in motion, make sure that top portion of door is not being detected by the sensor.

13. Once the sensors are correctly adjusted, tighten each locknut to hold sensor in position.
14. When load/unload modules installation and door proximity sensors adjustment are completed, press STOP/RESET touch pad until Service Mode main menu is displayed.

THIS COMPLETES THE INSTALLATION. Before operating equipment, Installation Checklist (Section 4) and Operational Test (Section 5) should be conducted by a qualified service technician.

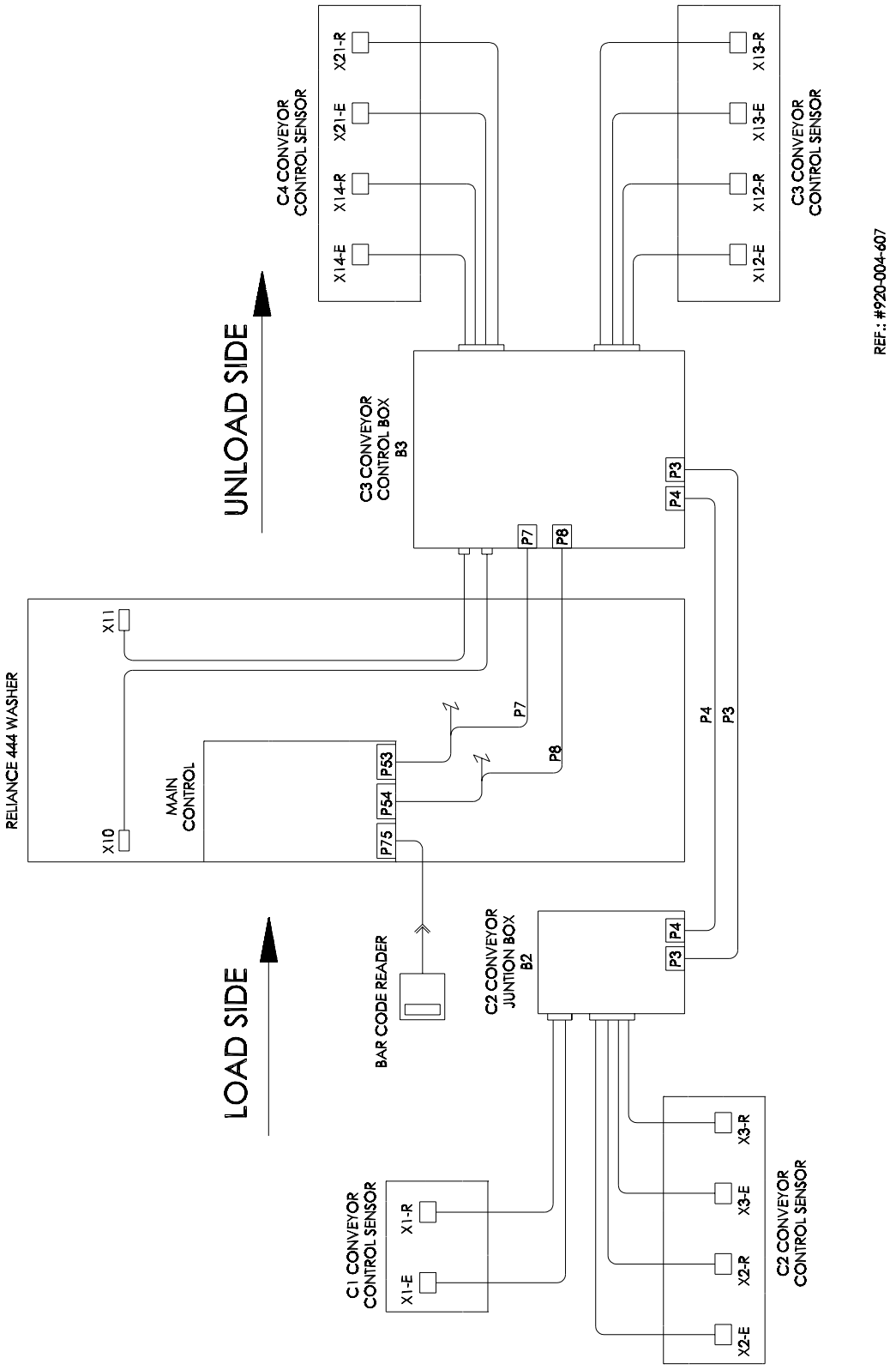


Figure 3-9. Electrical Schematic

INSTALLATION CHECKLIST

4

To assure complete and correct installation, Installation Checklist must be completed after the conveyor modules are installed and prior to performing Start-up Procedure.

NOTE: Contact your STERIS representative to schedule a technician to test your installation and demonstrate proper equipment operation.

- ❑ Disconnect switches (not by STERIS), capable of being locked in OFF position only, installed in electrical supply lines near the unit and in compliance with local codes, OSHA standards, etc.
- ❑ Electrical supply for conveyor modules is as specified on Equipment Drawing.
- ❑ Building air line supplies air to Amsco® Reliance® 444 Single-Chamber Washer/Disinfector as specified on washer equipment drawing (80 to 125 psig oil and moisture free).
- ❑ Conveyor modules are level.
- ❑ Drip pan drain hoses (D1 and D2) are properly connected.
- ❑ Floor surrounding modules has non-slip surface.

FINAL ASSEMBLY/START-UP PROCEDURE 5

Before Start-Up

1. Manually slide a basket (accessory loading rack) from the Load-end conveyor module into the wash chamber to check for proper level and alignment. Repeat for Unload-end module.
2. Ensure Main Power switch, located on washer electrical supply box, is ON and Power rocker switch is positioned to **POWER**.
3. Remove baskets and any other objects from the load/unload module conveyors.
4. Flip the **ON-OFF** control switch, mounted on the side of B3 electrical box, to **ON**.
5. Make sure both Emergency Stop buttons are pulled out (normal position).
6. Remove cover from B3 electrical box, located in C3 service compartment. Make sure CR3 (washer control) and CR1 (conveyor start/stop) relays are energized (see Figure 5-1).
7. Verify **POWER** and **RUN LED's** on the central processing unit (CPU) are lit (see Figure 5-1).

NOTE: If C1/C2 conveyor cylinder (two-rack load module) and C3/C4 conveyor cylinder (two-rack unload module) are not fully retracted (home position), they will automatically move to their home position.

8. Check CR2 (Emergency Stop button) relay operation as follows:
   a. Press Emergency Stop button on the load-end module. Check that CR2 relay is de-energized (LED mounted on top of CR2 is off).
   b. Pull out Emergency Stop button on the load-end module, and check that CR2 relay is energized.
   c. Press Emergency Stop button on the unload-end module. Check that CR2 relay is de-energized (LED mounted on top of CR2 is off).
   d. Pull out Emergency Stop button on the unload-end module, and check that CR2 relay is energized.

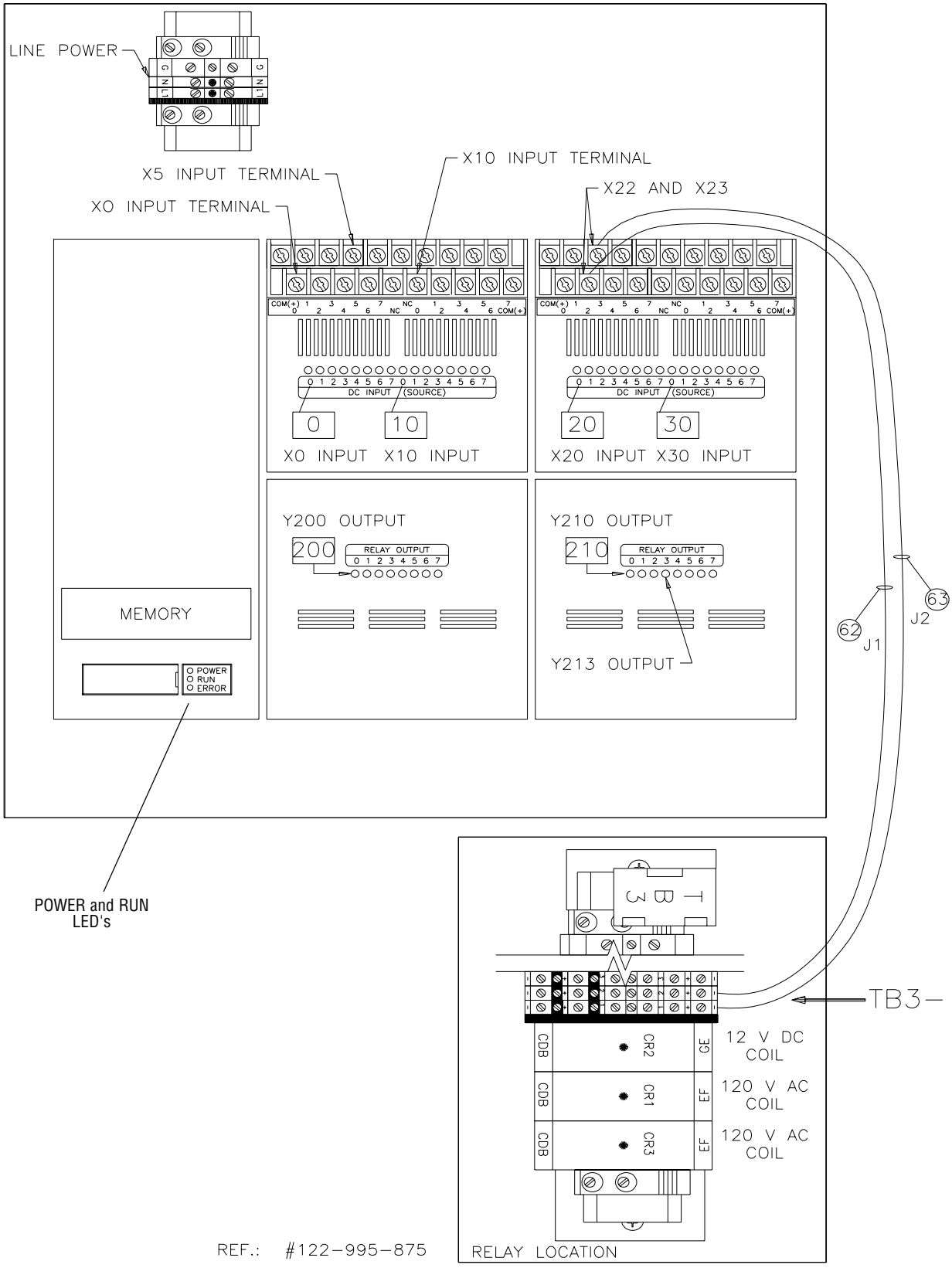


Figure 5-1. Central Processing Unit in B3 Electrical Box

9. Verify the following inputs are ON when conveyors are clear (see Figure 5-2 for locations of inputs):
   - X1 - Photoelectric Sensor on C1 (Two-rack Load Module only)
   - X2 - Photoelectric Sensor on C2
   - X3 - Photoelectric Sensor on C2
   - X12 - Photoelectric Sensor on C3
   - X13 - Photoelectric Sensor on C3
   - X14 - Photoelectric Sensor on C4 (Two-rack Unload Module only)
   - X21 - Photoelectric Sensor on C4 (Two-rack Unload Module only)
   - X22 - X23 (see Table 3-1) (LED is ON when jumper is in place).
10. Verify Y213 output on the CPU is **ON** (Emergency Stop buttons pulled out).
11. Position a screwdriver in front of the load door open proximity sensor (X10). Check that LED, mounted on the sensor, is lit and X10 input on the CPU turns **ON**.
12. Remove screwdriver from the load door open proximity sensor. Make sure X10 input turns **OFF**.
13. Position screwdriver in front of the unload door open proximity sensor (X11). Check that LED, mounted on the sensor, is lit and X11 input on the CPU turns **ON**.
14. Remove screwdriver from the unload door open proximity sensor. Make sure X11 input turns **OFF**.
15. Inspect pneumatic solenoid valves located inside each conveyor module. Ensure manual override selector, mounted on each valve (red actuator), is set for automatic mode. Dot on the selector must face the 0 position.
16. Position Main Power switch, located on washer electrical supply box, to **OFF**.
17. Open washer control front panel. Using one hand to support the control assembly, remove the two hex screws (upper right and upper left) holding assembly in place.
18. Carefully lower control assembly forward and downward until it stops in a horizontal position. Stops are provided to support the control in this position.

CAUTION! Observe the Electrostatic Precautions outlined in Section 3. Always wear a grounding wrist strap when removing or replacing PC boards or ICs.

NOTE: The following precautions should be taken whenever printed circuit boards are being handled or replaced:

- *Always use an ESD safe container when transporting boards from one location to another.*
- *No boards should be removed from their containers except at an approved static station or where personnel and machine are properly grounded.*

Figure 5-2. Location of Conveyor Inputs and Outputs

- *At minimum, use a wrist strap grounded to the washer when removing and/or replacing PC boards.*

Failure to follow the above precautions may result in electrostatic damage to the printed circuit board. If a static discharge happens to go through an integrated circuit and the transient current pulse is not effectively diverted by protective circuitry, the current from the discharge can flow through the board and raise the temperature of internal junctions to their melting points. Damage can range from latent degradation to complete destruction.

19. Flip dip switch S1 on double memory holder (located on control PC board) to **OFF** position, to select the Automatic mode eprom.
20. Raise control assembly and secure in position with screws previously removed.
21. Position Main Power switch, located on electrical supply box, to **ON** and set unit electrical disconnect switch to **ON** position.
22. Set Power rocker switch to **POWER** position. Display shows:

INSTR.	**UTENSILS**
GLASSWARE	**PLASTIC**

NOTE: If display shows "E-STOP PRESSED; PULL TO RESUME", Y213 output on load/unload module controller is not energized. Make sure both Emergency Stop Buttons are pulled out and the Load/ Unload Modules are connected to an electrical supply line.

23. Verify X25 input on the CPU is **ON** (CR1 Relay Energized). If X25 input is **OFF**, load/unload module will not load or unload basket into or from the washer chamber.

Start-Up

⚠ WARNING - PERSONAL INJURY HAZARD: When baskets are present on load conveyor, keep fingers/hands away from wash chamber and moving baskets.

1. For start-up purposes, create a short cycle, using Cycle # 10, with minimum time settings. Refer to the *Amsco Reliance 444 Washer/Disinfector Operator Manual, P-122999-133*, for instructions on creating custom cycles.
2. Once cycle is created, place an empty basket (accessory loading rack) on the Load-end conveyor module.
3. If two-rack load module, make sure only the X1 photoelectric sensor on C1 conveyor is detecting the basket placed on the load-end module. When X1 sensor detects a basket for 3 seconds, module operation is initiated. See Figure 5-2.

   If one-rack load module, make sure both X2 and X3 photoelectric sensors on C2 conveyor are detecting the basket placed on the load-end module. When X2 and X3 sensors detect a basket for 3 seconds, module operation is initiated. See Figure 5-2.
4. Verify washer load-end door opens and bar code reader turns on.

5. Pass the Cycle 10 Bar Code Tag in front of the bar code reader. Check that C2 conveyor pushes rack into chamber and cycle operation begins (If you do not have a Bar Code Tag, use illustration from Figure 5-3).
6. If C2 sequence is completed but code is not read. Door stays open. Alarm sounds and display appears:

NO BAR CODE DETECTED
PRESS START TO RESUME...

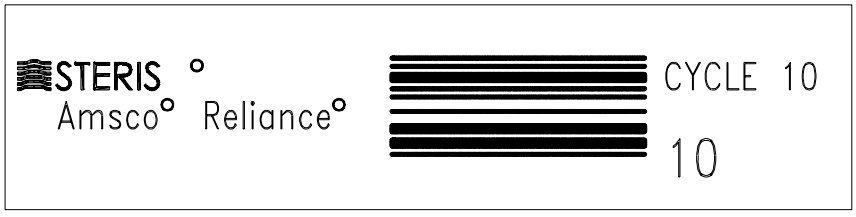
7. Press **START** touch pad. Alarm stops and door closes automatically. Display shows:

PRESS START TO
SELECT CYCLE

8. Press **START** touch pad. Cycle Menu appears on the display.
9. Select short cycle created and press **START** touch pad twice to initiate the cycle.
10. Verify washer unload-end door opens when cycle is complete. When door is fully open, C3 module will initiate its sequence to pull out the basket from the wash chamber.

IMPORTANT: *When C3 or C4 conveyor modules are working, keep fingers/hands away from moving baskets. Let the unload module(s) move the basket towards the end of unload module(s). Do not obstruct the last sensor (X21) of the unload module. If sensor is obstructed when cylinder is moving basket, cylinder will stop operation and an alarm will be generated if the condition persists.*

11. Process several baskets to check washer and modules for proper operation.



REF.#920-011-264

Figure 5-3. Bar Code Tag

Final Assembly

After operation of conveyor modules and washer has been tested, **anchor conveyor modules in position** as follows:

1. Locate four existing holes at the end of Load-end module base, toward the center (see Figure 5-4).
2. Insert drill through each hole in module base and drill 3/8" holes into the floor, approximately 2" (51 mm) deep.
3. Insert four anchoring pins provided through the module base into the floor (see Figure 5-3).
4. Repeat for Unload-end module.

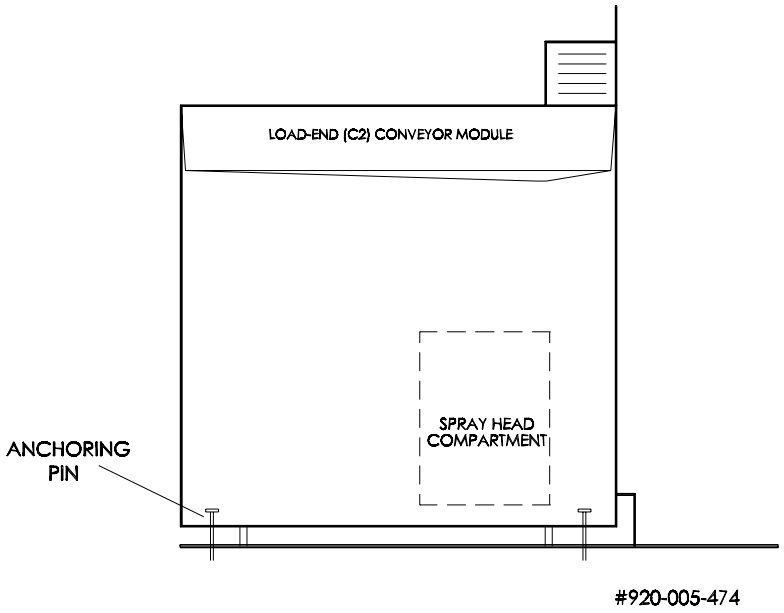


Figure 5-4. Insert Anchoring Pins

Cleanup

CAUTION: When removing adhesives from stainless steel, use a small amount of nonflammable cleaning solvent. Rub in a back-and-forth motion (in same direction as surface grain). Solvent rubbed in a circular motion or applied with a wire brush or steel wool on cabinet assemblies can be harmful to stainless steel. Do not use solvents on painted surfaces.

1. Remove any white tape or adhesive found on cabinet panels or components with a small amount of nonflammable cleaning solvent. Keep solvent away from all painted surfaces or damage may result.
2. Reinstall any cabinet panels or components that were removed for installation purposes.
3. Inspect work area to be sure all materials used during installation have been removed.

Conveyor modules are now ready for a thorough System Field Test, Calibration and a first Preventive Maintenance Checklist Inspection by a qualified STERIS service representative. Contact your STERIS Service Representative for availability and information on this service. Refer to the *Amsco Reliance 444 Single-Chamber Washer/Disinfector Operator Manual 122999-133,* for instructions on the operation of load/unload modules.

Protect your STERIS equipment with cost-effective extended service agreements

The best way to prevent costly downtime due to equipment malfunction is with regularly scheduled maintenance performed by qualified technicians trained in the latest technology. STERIS offers annual maintenance agreements to give your capital equipment planned maintenance that will help correct little problems before they become big ones. STERIS Engineering Service combines the precise maintenance program and factory-trained technicians to assure you of maximum productivity.

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